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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,559	11/10/2003	Jae Wang Lee	11037-145-999	5479
24341	7590	06/15/2006	EXAMINER	
MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE 3000 EL CAMINO REAL PALO ALTO, CA 94306			SMITH, TYRONE W	
			ART UNIT	PAPER NUMBER
			2837	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

Office Action Summary

Application No.

10/705,559

Applicant(s)

LEE, JAE WANG

Examiner

Tyrone W. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-5 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatsuka (JP09-238490) in view of Kato et al (5691615) and (Wikipedia: <http://www.wikipedia.org/>).

Regarding Claims 1, 3, 4. Nakatsuka discloses a motor controller, which includes calculating an estimated inertia moment (Figure 2 item 6) of a motor (Figure 2 item 1); the speed controller (Figure 2 item 2) output current being calculated based on the speed command (Figure 2) and moment of inertia; and controlling the motor (Figure 2 item 1) using the final current command. Further, the motor (Figure 2 item 1) is directly coupled to an engine (load Figure 2 item 9). However, Nakatsuka does not disclose the using an acceleration command in conjunction with the moment of inertia to control the motor.

Kato discloses an adaptive PI control method, which controls the motor (current) based on the acceleration command and the estimated inertia (column 8 lines 1-16). The acceleration command and the estimated inertia is multiplied to a first term (compensation value) and added to the calculated torque command from the speed deviation (Figure 1 items 1 and 2), which is used to control the motor system. However, neither Nakatsuka nor Kato disclose specifically the calculation of the forward compensation current.

The Wikipedia gives the concept of the torque as related to the use of the moment of inertia which is $\text{Torque} = \text{moment of inertia} \times \text{angular acceleration}$. In the current invention the torque is constant, however by using the calculation above the torque can be found and used as a constant. It would be obvious for purposes if the claimed invention to use the acceleration \times (moment of inertia / Torque) to find a forward compensation of the claimed invention.

In re Stevens, 212 F.2d 197, 101 USPQ 284 (CCPA 1954) (Claims were directed to a handle for a fishing rod wherein the handle has a longitudinally adjustable finger hook, and the hand grip of the handle connects with the body portion by means of a universal joint: The court held that adjustability, where needed, is not a patentable advance, and because there was an art-recognized need for adjustment in a fishing rod, the substitution of a universal joint for the single pivot of the prior art would have been obvious.

It would have been obvious to one of ordinary skill in the art at the time of invention to adjust and use the equations in the Wikipedia to calculate the claimed invention. The advantage of calculating or adjusted the equations would provide a motor control method and a system thereof in which revolution speed of the motor is controlled based on an estimated inertia moment of the motor and an acceleration speed command.

Regarding Claim 2. The Wikipedia discloses an equation for finding a torque as a function of time which is $\text{Torque} = \text{moment of inertia} (dw/dt) = \text{moment of inertia} \times \text{angular acceleration}$. From the mathematical expression used it would have been obvious to adjust the formula to give an equation for finding the moment of inertia.

In re Stevens, 212 F.2d 197, 101 USPQ 284 (CCPA 1954) (Claims were directed to a handle for a fishing rod wherein the handle has a longitudinally adjustable finger hook, and the hand grip of the handle connects with the body portion by means of a universal joint. The court held that adjustability, where needed, is not a patentable advance, and because there was an

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art-recognized need for adjustment in a fishing rod, the substitution of a universal joint for the single pivot of the prior art would have been obvious.

It would have been obvious to one of ordinary skill in the art at the time of invention to adjust and use the equations in the Wikipedia to calculate the claimed invention. The advantage of calculating or adjusted the equations would provide a motor control method and a system thereof in which revolution speed of the motor is controlled based on an estimated inertia moment of the motor and an acceleration speed command.

Regarding Claims 5. Nakatsuka discloses that the speed controller (Figure 2 item 2) output current is a difference between a speed command that is calculated based on the acceleration command (Figure 2) and a motor speed (Figure 2 item 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to adjust and use the equations in the Wikipedia to calculate the claimed invention. The advantage of calculating or adjusted the equations would provide a motor control method and a system thereof in which revolution speed of the motor is controlled based on an estimated inertia moment of the motor and an acceleration speed command.

3. Claims 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatsuka (JP09-238490) in view of Kato et al (5691615).

Regarding Claim 6. Nakatsuka discloses a motor controller, which includes calculating an estimated inertia moment (Figure 2 item 6) of a motor (Figure 2 item 1); the speed controller (Figure 2 item 2) output current being calculated based on the speed command (Figure 2) and moment of inertia; and controlling the motor (Figure 2 item 1) using the final current command. Further, the motor (Figure 2 item 1) is directly coupled to an engine (load Figure 2 item 9).

However, Nakatsuka does not disclose the using an acceleration command in conjunction with the moment of inertia to control the motor.

Kato discloses an adaptive PI control method, which controls the motor (current) based on the acceleration command and the estimated inertia (column 8 lines 1-16).

It would have been obvious to one of ordinary skill in the art at the time of invention to add Kato use of an acceleration command with Nakatsuka's current invention. The advantage of combining the two would provide a stable motor system can guard against fluctuation in the system parameters.

4. Claims 7-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatsuka (JP09-238490) in view of Kato et al (5691615) as applied to claim 6 above, and further in view of (Wikipedia: <http://www.wikipedia.org/>).

Regarding Claims 7 and 9. Nakatsuka discloses a motor controller, which includes calculating an estimated inertia moment (Figure 2 item 6) of a motor (Figure 2 item 1); the speed controller (Figure 2 item 2) output current being calculated based on the speed command (Figure 2) and moment of inertia; and controlling the motor (Figure 2 item 1) using the current command. Further, the motor (Figure 2 item 1) is directly coupled to an engine (load Figure 2 item 9). However, Nakatsuka does not disclose the using an acceleration command in conjunction with the moment of inertia to control the motor.

Kato discloses an adaptive PI control method, which controls the motor (current) based on the acceleration command and the estimated inertia (column 8 lines 1-16). However, neither Nakatsuka nor Kato disclose the formulas for calculating the moment of inertia and forward compensation as in claims 7-8.

Regarding Claim 7. The Wikipedia discloses an equation for finding a torque as a function of time which is $\text{Torque} = \text{moment of inertia} (dw/dt) = \text{moment of inertia} \times \text{angular acceleration}$. From the mathematical expression used it would have been obvious to adjust the formula to give an equation for finding the moment of inertia.

In re Stevens, 212 F.2d 197, 101 USPQ 284 (CCPA 1954) (Claims were directed to a handle for a fishing rod wherein the handle has a longitudinally adjustable finger hook, and the hand grip of the handle connects with the body portion by means of a universal joint. The court held that adjustability, where needed, is not a patentable advance, and because there was an art-recognized need for adjustment in a fishing rod, the substitution of a universal joint for the single pivot of the prior art would have been obvious.

It would have been obvious to one of ordinary skill in the art at the time of invention to adjust and use the equations in the Wikipedia to calculate the claimed invention. The advantage of calculating or adjusted the equations would provide a motor control method and a system thereof in which revolution speed of the motor is controlled based on an estimated inertia moment of the motor and an acceleration speed command.

Regarding Claim 9. The Wikipedia gives the concept of the torque as related to the use of the moment of inertia which is $\text{Torque} = \text{moment of inertia} \times \text{angular acceleration}$. In the current invention the torque is constant, however by using the calculation above the torque can be found and used as a constant. It would be obvious for purposes if the claimed invention to use the acceleration $\times (\text{moment of inertia} / \text{Torque})$ to find a forward compensation of the claimed invention.

In re Stevens, 212 F.2d 197, 101 USPQ 284 (CCPA 1954) (Claims were directed to a handle for a fishing rod wherein the handle has a longitudinally adjustable finger hook, and the hand grip of the handle connects with the body portion by means of a universal joint. The court

held that adjustability, where needed, is not a patentable advance, and because there was an art-recognized need for adjustment in a fishing rod, the substitution of a universal joint for the single pivot of the prior art would have been obvious.

It would have been obvious to one of ordinary skill in the art at the time of invention to adjust and use the equations in the Wikipedia to calculate the claimed invention. The advantage of calculating or adjusted the equations would provide a motor control method and a system thereof in which revolution speed of the motor is controlled based on an estimated inertia moment of the motor and an acceleration speed command.

Regarding Claims 10. Nakatsuka discloses that the speed controller (Figure 2 item 2) output current is a difference between a speed command that is calculated based on the acceleration command (Figure 2) and a motor speed (Figure 2 item 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to adjust and use the equations in the Wikipedia to calculate the claimed invention. The advantage of calculating or adjusted the equations would provide a motor control method and a system thereof in which revolution speed of the motor is controlled based on an estimated inertia moment of the motor and an acceleration speed command.

Response to Arguments

5. Applicant's arguments with respect to claim 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the Nakatsuka does not use an acceleration command in conjunction with the estimated moment of inertia to control the motor. Examiner uses the Kato where adaptive PI control method, which controls the motor (current) based on the acceleration command and the estimated inertia. The acceleration command and the estimated inertia is

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multiplied to a first term (compensation value) and added to the calculated torque command from the speed deviation, which is used to control the motor system.

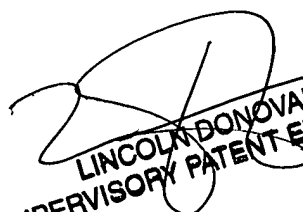
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyrone W. Smith whose telephone number is 571-272-2075. The examiner can normally be reached on weekdays from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan, can be reached on 571-272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tyrone Smith
Patent Examiner

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LINCOLN DONOVAN
SUPERVISORY PATENT EXAMINER